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Community-based Health Financing and Child Health

When Oumou visited her neighbor Mariama for tea, as she does most mornings, she noticed that Mariama's four-year-old son Mamadou was curled up on his sleeping mat. He had a dull look in his eyes and some sweat on his brow, instead of being out in the compound laughing and playing with the other children as he usually was at that hour. Oumou asked Mariama what was wrong. Mariama replied, "Mamadou has a fever, so he's "resting" until it goes away or gets worse." Oumou asked Mariama why she hadn't taken Mamadou to the community health center to be checked and treated, especially since it was malaria season. Mariama replied, "I don't want to pay the fees charged at the center, and anyway, the fever might go away by itself." Oumou retorted, "I take my children right away to the center when they have fevers and I don't worry about the fees, except for a minor co-pay, because my family is a member of the MHO. Why aren't you?" Mariama sighed and said, "We can't afford to spend more money on anything. We seem to be OK right after we sell our harvest, but pretty soon afterward, we're just scraping by." Oumou came right back, saying, "But the MHO takes this into account. It lets you pay your premiums at harvest time. When your purse is fat you don't miss the premium money, then you don't have to spend much the rest of the year and you know that you can get help whenever anyone is sick—and we both know how often the little ones fall ill." She added, "By the way, has your little Fati had her immunizations? The MHO called a general assembly of members last month and one of the things that the speakers focused on was for all member families to get their newborns immunized. The immunizations at the community health center are free of charge. I got my Aisha

immunized, so now I have no worries about her getting measles, polio, and a lot of other things that I don't even remember." Finally, Mariama broke in, "OK, OK, I'll look into getting Fati to complete her immunizations—she got some already and I have her card somewhere—and I'll look into talking to Abdoulaye (her husband) about joining the MHO—but joining is unlikely until the next harvest. If I promise to do all of this, could you lend me 1500 francs so I can take Mamadou to the health center?"



Introduction

The purpose of this brief is to look into systematically collected data related to the scenario above. It reports on the analysis of the effects that membership in community-based health financing schemes (or mutual health organizations [MHOs]) has on the use of health services when a member is ill or injured and, specifically, on five priority child health services (immunizations, vitamin A supplementation, treatment of diarrheal disease, and prevention and treatment of malaria). The results come from household surveys performed by the Partners for Health Reform*plus* project (PHR*plus*) in the three West African countries of Ghana, Mali, and Senegal in 2004, though the Mali survey offers more comprehensive results, given its focus on child health.

Child health services have the potential to make major inroads into the high morbidity and mortality rates in sub-Saharan Africa. However, to achieve their potential, the services must be used. The fees charged for some child health services often are cited as a barrier to their use, particularly by the disadvantaged. MHOs (see box) offer their members partial or complete relief from fees at the time that the members need to use the health services covered by the schemes; member premiums are pooled to pay in place of the fees. For the services that bear no charge (such as immunizations or vitamin A supplementation), MHO membership might increase use by bringing members into more frequent contact with health services or by raising members' awareness and focus on health issues. Thus, it is of interest to learn what factors influence families with children to join MHOs and, in particular, whether low socioeconomic status is a barrier to joining MHOs. Then, once children are covered by MHOs, the question may be asked, how does MHO coverage affect the use of services for which fees are charged and those offered at no charge. This brief takes advantage of the three household surveys performed by PHR*plus* to address these questions.

The child health services that are the focus of this analysis are: immunizations, treatment of diarrhea (especially with oral rehydration salts [ORS]), the use of insecticide-treated nets (ITNs) to prevent malaria, the treatment of malaria, and vitamin A supplementation. For the purpose of this analysis, the children of interest are those who are 0-5 years of age¹; sometimes the target age for a given service is a subset of that age group. In all

Community-based health financing in sub-Saharan Africa, and PHR*plus*

PHR*plus* has assisted with the development of community-based health financing schemes in many countries in sub-Saharan Africa since the late 1990s. The schemes, known as mutual health organizations (MHOs), as *mutuelles* (in Francophone countries), as well as by other names, involve community groups organizing themselves to regularly collect contributions or premiums from individual or household voluntary members; these funds are used to pay charges for a defined set of health care benefits when services are needed from specified government or private providers. The MHOs sometimes require household or group membership, but not always. They usually require that those who join the scheme make an initiation payment before the date at which they are eligible for benefits. Often, but not always, the schemes have a specified contractual relationship with the provider(s) that their members may use. The contracts usually specify the reimbursement rates for the services covered. Some of the MHOs require members to make small out-of-pocket co-payments at the time of use of some services.

MHOs have been growing, in number and in membership, at a rapid pace in many countries since the late 1990s. The number of schemes inventoried through the West Africa regional information-sharing body, *La Concertation*, grew from 76 in 1997 to more than 600 by 2004. However, a number of questions remain about their long-term viability, their relationship to overall health financing policy, their impact on use of services, and what groups of people they serve. To try to address some of these questions, PHR*plus* organized household surveys in Ghana, Mali, and Senegal. Each survey had a specific focus, but all three were conducted with a common core set of questions. The Ghana survey focused on setting a baseline for a change in national health financing policy, from voluntary MHO schemes to nationally mandated district-wide schemes. The Mali survey was a follow-on to one conducted in the same localities in 1999, before there were any MHOs. It focused on evaluating the impact of the schemes on a specific set of indicator services where some of the populations surveyed in 1999 had the opportunity to join MHOs and others did not. The indicator services for the 2004 Mali survey included an expanded set of child health services beyond those covered in the 1999 baseline. The Senegal survey focused on the financial viability of the MHOs. There are reports on each of the surveys, a synthesis report that examines the combined results, and a series of other products related to specific aspects of the surveys (see bibliography).

¹ The analyses of the Ghana and Senegal surveys cover children 0-4 years of age; the Mali analyses cover children 0-5 years of age.

three countries, government health facilities offer immunizations and vitamin A supplementation at no charge, but they typically charge fees for the treatment of diarrhea, malaria, and other illnesses and injuries. ITNs also typically must be purchased. Thus, the insurance feature of MHO membership may cover the curative services and ITNs for which there are charges, but not immunizations or vitamin A. However, it may be hypothesized that membership in an MHO tends to promote the use of all health services to its members. Hence, the hypothesis is tested that MHO membership increases the use of all child health services.

Surveys

The surveys gathered information about the number and sociodemographic characteristics of the individual household members, the estimated value of consumption or household assets as proxies for income, information about the communities that the households are in, and information about the need for and use of health services.

The sample sizes of the three surveys, including the number of children 0-5 years of age are shown in Table 1. As mentioned, the Mali survey focused on child health services, allowing for more extensive analysis, as compared to the other two countries.

Analyses were performed with Stata software using a logistic regression approach, with service utilization as dependent variables and individual, household, community, and MHO membership variables as independent variables. The coefficients reported are in the form of odds ratios and the significance of the variables is indicated at the 1, 5, and 10 percent levels.

The research questions addressed take the following forms:

- ▲ What factors are associated with households deciding to enroll their children age 0-5 years for MHO coverage?
- ▲ Does MHO membership increase the likelihood of children using priority services, controlling for demographic and socioeconomic factors?

Results

A summary of the answers found to these questions is shown in Table 2. The following sections provide more detail about the analyses and results.

Country	Households	Individuals	Children 0-5**
Ghana	1,806	9,553	1,411
Mali	2,280	15,020	3,192***
Senegal	1,080	9,259	1,223

**Note that the regression analyses of predictors of use of curative services focus on the much smaller subsets of children whose caretakers reported they had illnesses or injuries in the two-week recall periods of the surveys.*
*** For Ghana and Senegal, the analysis is of children 0-4 years; for Mali it is children 0-5 years of age.*
**** Note that 3,192 children 0-5 were identified in the household rosters, but a subset of 1,400 were the subject of detailed data collection on their situation concerning MHO coverage and health care seeking behavior.*

Item	Result
Factors associated with enrollment of children in MHOs (Mali)	<ul style="list-style-type: none"> ▲ Education of child's caretaker (+) ▲ Child in female-headed household (+) ▲ Distance to nearest facility (-) ▲ Not associated: socioeconomic status of household
Seeking curative care: <ul style="list-style-type: none"> ▲ Modern/formal care for fever (Mali) ▲ Modern/formal care within 48 hours of fever onset (Mali) ▲ Modern/formal care for diarrhea (Mali) ▲ Modern/formal care or ORS for diarrhea (Mali) ▲ Modern/formal care for illness or injury (Ghana and Senegal) 	MHO coverage as a predictor: <ul style="list-style-type: none"> ▲ Not significant ▲ Positively significant ▲ Positively significant ▲ Positively significant ▲ Not significant
Obtaining preventive services: <ul style="list-style-type: none"> ▲ Attaining full immunization (Mali) ▲ Receiving vitamin A supplementation in past six months (Mali) ▲ Sleeping under an insecticide treated mosquito net (Mali) 	MHO coverage as a predictor: <ul style="list-style-type: none"> ▲ Not significant ▲ Not significant ▲ Positively significant

Predictors of enrollment of children under 5 years of age as beneficiaries in an MHO

The first question to address is: what factors are associated with households electing to enroll their children in MHOs? Data from the Mali survey allow us to analyze this question. The MHOs in the Mali survey area allow households to join by paying a membership fee, and then they must pay premiums regularly for listed beneficiaries within the household to keep them eligible for coverage of specified services. Being a beneficiary in an active MHO household makes the child eligible for coverage for health center curative care services² and also increases the child's contacts with the health care system that could be expected to facilitate access and exposure to preventive care services.

Table 3 presents the results of logit regression of individual, household, and community characteristics on enrollment of children 0-5 years of age in an MHO in Mali (among children who live in an area where there is a functional MHO). The results show that only one individual characteristic and one community characteristic, but several household characteristics are significant predictors of covering children. Not significant are any of the socioeconomic status variables, indicating relatively equitable access to MHO coverage for young children. Notable among the significant predictors are the education of the child's caretaker (positive), children in households headed by women (positive), and distance to the nearest facility (negative). The variables on ethnic group and household size (positive) also are significant.

The result that children under 1 year of age are less likely to be enrolled than other children under 5 might be explained by households failing to add newborns to MHO coverage immediately. The MHOs permit households to enroll newborn children and new spouses without paying additional membership fees. However, the household head has to declare the additional beneficiary, have him or her added to the membership booklet, and begin paying the additional premium amount.

² The MHOs cover 75 percent of the fees charged by health centers for curative care services, with the remaining 25 percent covered by the user as a co-payment.

Table 3. Predictors of enrollment of children 0-5 years of age in an MHO for those who live in an area with a functional MHO (Mali)

Item	Child under 5 listed as a beneficiary in MHO member household (n=740)
R = reference group	Odds ratio
Individual Characteristics	
Sex of individual (R = male)	
Female	0.908
Age of child (R = >=24 months)	
0-11 months old	0.554***
12-23 months old	1.335
Reported health status (R = excellent)	
Average to bad health	1.223
Good health	1.250
Child chronically ill (R = no)	
Chronically ill	0.712
Child handicapped (R = no)	
Handicapped	2.823
Household Characteristics	
Household size	1.119**
Gender of HH head (R = male)	
Female	8.249***
Age of HH head (R = <50 years old)	
HH 50+ years	0.716
Ethnic group of HH head (R = Bambara)	
Senofio	4.896***
Other	2.902**
Education of HH head (R = no education)	
Primary +	1.019
Education of caretaker (R = no education)	
Primary +	2.630***
Occupation of HH head (R = none)	
Agriculture	1.465
Commerce/Administration	0.875
Other	1.712
Occupation of caretaker (R = none)	
Agriculture	0.586
Commerce/Administration	0.707
Other	0.274
Socioeconomic status of HH (R = poor)	
Middle-poor	0.751
Middle	1.949
Middle-rich	0.686
Rich	1.473
Community Characteristics	
Access to health facility (R = <=1 km)	
2-5 kms	0.452
6-10 kms	0.265*
11+ kms	5.002
Urban/rural residence (R = rural)	
Large urban	0.631
Small urban	0.732

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Predictors of use of child health services

As mentioned above, the Mali survey focused on the use of services by young children, including several that are specifically targeted at children 0-5 years of age. Hence, the sample size and the coverage of services in the Mali survey is much greater than in those surveys conducted in Ghana and Senegal. The Ghana and Senegal surveys were more general in their coverage of services used and of all age groups. The Ghana and Senegal surveys have relatively small sub-samples of young children than the Mali survey, reducing the power of the multivariate analyses to detect significant independent variables. We begin the examination of the effects of MHO coverage on young children by looking at the more detailed Mali results before turning to the results from Ghana and Senegal.

Mali Results

The Mali survey focused on a number of specific child health services, two of them curative (treatment of fever presumed to be malaria, treatment of diarrhea) and three of them preventive (prevention of malaria by sleeping under ITNs, immunizations, and vitamin A supplementation). We begin by examining the influence of MHO coverage on the use of the curative services.

Treatment for fever

Their caretakers reported that 19 percent of children 0-5 had a fever in the recall period of two weeks. Because of the frequency with which fevers are caused by malaria and the cost and complexity of doing a specific diagnosis, fevers are presumed to be malaria and are to be treated as such in Mali health centers, the first line of care. The results from the analysis below show that, while MHO coverage is not a significant predictor of seeking formal health care for young children, it is a significant positive predictor of seeking care early (within 48 hours of onset of symptoms). More detail on the findings from analysis of the data follows.

Of the 503 fever cases in children 0-5, 33 percent sought treatment from a modern provider. Those children who were eligible for MHO coverage sought treatment from a modern provider at a significantly higher rate (54

percent, $p < 0.01$). However, when looking at the issue of getting some care when ill with a fever, there was no significant difference between young children who were eligible for MHO coverage ($N = 43$) and those who were not. In addition, significantly fewer of those eligible for MHO coverage compared to those not eligible received treatment at home by the family ($p = 0.06$). Finally, while 47 percent of children 0-5 overall received treatment within 48 hours, a significantly higher 80 percent of those eligible for MHO coverage were treated early ($p = 0.007$).

Table 4 (see page 6) presents the results of a logit regression analysis of predictors of receiving treatment of fever in the formal health care system. Significant predictors of receiving modern treatment (first column) include the seriousness of the illness, being male, and living closer to a health facility, but not MHO coverage or socioeconomic status. However, eligibility for MHO coverage was the only significant predictor of seeking care early (see the second set of columns). This would seem to indicate that MHO coverage helps get children with fevers to seek care early in the course of illness, so that delays do not result in the condition worsening such that there is more risk and the need for more substantial and more costly treatment.

Treatment for diarrhea

The caretakers of children under 5 reported that 13 percent of them had been ill with diarrhea in the two-week recall period. Provision of ORS is Mali's stated norm for treatment of diarrhea. However, their caretakers reported that only 8 percent of children received ORS. Ten percent were taken to a modern facility for treatment. A large share of children, whether treated in a modern facility or at home, received antibiotics (42 percent), rather than or in addition to ORS. While seeking care in a modern facility might not have resulted in treatment with ORS, it does reflect the care seeking behavior that MHOs can influence. In fact, 44 percent of those children eligible for MHO coverage ($N = 29$) received some kind of treatment, significantly higher than children in the general population ($p < 0.003$). Of those ill with diarrhea, 17 percent of the total sample of children either were treated with ORS and/or went to a modern facility, while 46 percent of those eligible for MHO coverage were so treated ($p < 0.0003$).

Table 4. Predictors of entry into the modern health care system (public or private) for treatment of fever for children under 5 years of age (Mali)		
Item	Children under 5 having fever in the previous 2 weeks who sought care in a formal health facility (n=478)	Children under 5 reporting fever and seeking modern health care who sought care within 48 hours (n =174)
R = reference group	Odds ratio	Odds ratio
Individual Characteristics		
Covered by the MHO (R = no)		
Eligible (up-to-date and beneficiary)	1.514	4.611*
Sex of individual (R = male)		
Female	0.615*	0.680
Perceived seriousness (R = no serious)		
Serious	3.125***	0.511
Very Serious	4.176***	1.368
Household Characteristics		
Gender of HH head (R = male)		
Female	0.985	1.889
Ethnic group of HH head (R = Bambara)		
Senofa	1.609	0.522
Other	1.477	0.516
Education of HH head (R = no education)		
Primary+	1.328	1.249
Socioeconomic status of HH (R = poor)		
Middle-poor	0.398***	1.688
Middle	1.128	1.360
Middle-rich	1.015	0.687
Rich	1.087	1.467
Community Characteristics		
Access to an MHO (R = no)		
Has access to MHO	2.134**	1.024
Access to health facility (R= <=1 km)		
2-5 kms	0.492*	0.504
6-10 kms	0.435**	0.759
11+ kms	0.577	1.530
Urban/rural residence (R = rural)		
Large urban	1.077	1.748
Small urban	0.327*	0.607
* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$		

Table 5 presents the results of logit regression on predictors of: (1) use of modern facility and (2) use of a modern facility and/or receiving ORS in children under 5 years of age with diarrhea. In both forms, MHO coverage was a positive and significant predictor. Those children eligible for MHO coverage³ were six times as likely to

seek care in a modern facility. This was the only significant predictor of seeking modern care for diarrhea in children. Only two variables, both weakly significant, were predictors of receiving ORS and/or seeking care in a modern facility: eligibility for MHO coverage (positive) and living in Blaville, the small urban center (negative).

Table 5. Predictors of entry into the modern health care system (public or private) for treatment of diarrhea in children under 5 years of age (Mali)

Item	Children under 5 years of age having diarrhea in the past 2 weeks and seeking care in a modern health facility (n=284)	Children under 5 years of age with diarrhea in the past 2 weeks who received ORS and/or sought care in a modern health facility (n = 284)
R = reference group	Odds ratio	Odds ratio
Individual Characteristics		
Covered by the MHO (R = no)		
Eligible (up-to-date and beneficiary)	6.912**	3.014*
Sex of individual (R = male)		
Female	1.017	1.046
Household Characteristics		
Gender of HH head (R = male)		
Female	1.383	1.451
Ethnic group of HH head (R = Bambara)		
Senofe	0.799	2.191
Other	1.538	2.215
Education of HH head (R = no education)		
Primary +	1.526	0.907
Education of caretaker (R = no education)		
Primary +	0.963	0.881
Socioeconomic status of HH (R = poor)		
Middle-poor	0.369	1.045
Middle	1.141	1.885
Middle-rich	2.142	1.699
Rich	0.812	3.660
Community Characteristics		
Access to an MHO (R = no)		
Has access to MHO	1.950	2.059
Access to health facility (R= <=1 km)		
2-5 kms	0.414	0.800
6-10 kms	0.906	0.712
11+ kms	0.684	0.819
Urban/rural residence (R = rural)		
Large urban	0.588	0.380
Small urban	0.174	0.133*

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

³ Those eligible for MHO coverage in the case of diarrhea treatment are those registered as a beneficiary and whose household paid premiums in the month of the survey or the month prior.

Immunization

The dependent variable for the analysis of immunization is children age 12-23 months who received the third dose of the DTP vaccine (DTP3). This is the standard for considering a child to be fully immunized.

Immunizations are provided to children in Mali during their visits to health facilities, through outreach sessions, and during annual campaigns (National Immunization Days). Immunization coverage is measured among children 12-23 months and 158 children in this age group were surveyed (71 children were from active member

households).⁴ Immunization coverage overall was high: 83 percent had received DTP3 before their first birthday. There was no significant difference in coverage between MHO households and the general population.

Logit regression on predictors of immunization coverage indicates no effect of MHO membership (see the first column in Table 6). Interestingly, female children are about four times more likely to be immunized. At the household level, education of the household head has a negative effect, while education of the caretaker has a positive effect on the likelihood of a child being fully immunized. Household socioeconomic status in quintile

Table 6. Predictors of use of preventive services (Mali)

Item	Immunizations: DTP3 before first birthday (n=158 children 12-23 months)	Vitamin A supplementation (n=657 children 6-59 months)	Sleeping under insecticide-treated mosquito net (n=1261 children < 5)
R = reference group	Odds ratio	Odds ratio	Odds ratio
Individual Characteristics			
Gender (R = male)			
Female	4.028**	0.837	0.890
Household Characteristics			
Live in an MHO member household	1.416	1.060	2.129***
Head of household (R=male)			
Female	0.617	0.077***	0.864
Education of HH head (R= no education)			
Primary or higher	0.274**	1.175	1.067
Education of caretaker (R=no education)			
Primary or higher	3.422*	0.817	1.440*
Ethnic group (R = Bambara)			
Senofe	1.153	0.971	1.131
Other	2.576	1.334	1.005
HH wealth (R=poor)			
Middle poor	0.188**	0.981	0.916
Middle	0.305	0.792	1.158
Middle rich	0.314	1.523	1.096
Rich	0.536	1.461	1.749
Community characteristics			
Access to an MHO (R = no)			
Has access to MHO	1.977	1.192	1.197
Access to health facility (R= <=1 km)			
2-5 kms	0.747	0.922	1.016
6-10 kms	0.556	0.921	0.470***
11+ kms	DROPPED	2.360*	1.499

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

⁴ This number is small due to the sampling methodology, which focused for all households (with the exception of MHO households in Bla) in capturing information on all children under 5 in households with women either pregnant or having delivered in the previous 12 months. Because of this sampling, these women were less likely to have children in the 12-23 month age bracket.

2 had a negative effect on immunization. Distance to health facilities did not show an impact, but living in the large urban center had a weakly negative impact.

Vitamin A

The dependent variable for the analysis of vitamin A is children age 6-59 months who received a supplement of vitamin A in the six months prior to the survey.

In Mali, the policy is for vitamin A supplementation to be given to each child every six months from age 6 months to 5 years. Vitamin A is provided during routine immunizations (normally completed before the first birthday), during routine child visits, and during biannual campaigns (often combined with National Immunization Days).

For the purposes of the analysis of the survey data, a child was counted as having received vitamin A supplementation if the information appeared on the child's immunization card or, when no card was available, if the child's caretaker reported it.⁵ In the overall sample, 42 percent of the children 6-59 months of age⁶ had received a vitamin A tablet in the previous six months. There was no significant difference in this percentage between active MHO member households and the rest of the population.

The logit regression results shown in the second column in Table 6 indicate that MHO coverage was not a significant predictor of receipt of vitamin A supplementation. Only gender of the household head was a highly significant predictor. Children living in female-headed households are less likely to receive vitamin A supplementation than those in male-headed households. The only other variable that shows any significance is long distance (11 or more kilometers) from the nearest health center. The positive odds ratio on this variable would seem to indicate that some kind of special effort was made to reach the distant communities in the sample with vitamin A.

Use of ITNs to prevent malaria

The method of prevention of malaria among children 0-5 years that the survey examined is the use of ITNs for protection while sleeping. This analysis uses sleeping under an ITN the night prior to the survey as the variable of interest.

⁵ It should be noted that children receiving vitamin A supplementation through Intensive Nutrition Weeks or National Immunization Day campaigns generally do not have that noted on their immunization card. In this case, the coverage rate is probably an underestimation because those with immunization cards were not asked about whether they had received vitamin A; the information came solely from the card itself.

⁶ Of these children, 200 were from active MHO households.

For the children under 5 surveyed, their caretakers reported that 38 percent of them slept under an ITN the night prior to the survey. However, in active MHO member households, 62 percent of children slept under a treated net ($p < 0.000$). This effect was reflected in the results of the logit regression shown in the third column in Table 6. Children living in active MHO households were significantly more likely to sleep under an ITN than other children under 5 years of age. In terms of household characteristics, the child's caretaker having at least some primary education makes the children 1.4 times more likely to sleep under an ITN. Children living in the large urban center and those living 6-10 kilometers from a health facility were significantly less likely to sleep under an ITN.

Ghana and Senegal Results

We begin by looking at the descriptive statistics and bivariate relationships found in the Ghana and Senegal data. In Ghana, children under 5 represented about a fifth of those reporting illness or injury in the recall period (21 percent), using outpatient services (19 percent), and using inpatient services (21 percent), roughly in line with their share of the total population. Note: the under 5 group represents 15 percent of the household population. In Senegal, children under 5 comprised 13 percent of the surveyed household population and accounted for 16 percent of those reporting illness or injury in the two-week recall.

The pattern of morbidity among children 0-4 years of age in Ghana (see Table 7) differed from the overall sample, with the major causes of morbidity among children being malaria and diarrhea. In Senegal, the patterns of morbidity were more similar between the overall sample and the children 0-4. The exception in Senegal is for reported cough (presumed to be acute respiratory infections [ARI]), where children reported almost double the rate in the overall sample (42 versus 24 percent).

Table 7. Reported causes of morbidity (percent of responses) in two-week recall, Ghana and Senegal, overall sample and young children

	Ghana		Senegal	
	Overall sample	Children 0-4	Overall sample	Children 0-4
Malaria or fever	36	56	71	72
Diarrhea	6	14	11	14
ARI or cough	4	3	24	42
Accident/injury	7	5	6	7

Note: whereas only single responses were allowed in the Ghana survey, the Senegal survey permitted multiple illness responses.

In both countries, where children sought care (see Table 8) was similar to the overall sample population. About half are treated at home, but more children in Senegal are taken to formal providers (84 percent) than in Ghana (41 percent). In both countries, government providers were more important sources of care than private providers.

Table 8. Sources of care (percent reporting using each source), Ghana and Senegal, among child respondents 0-4 years of age reporting a recent illness or injury

	Ghana		Senegal	
	Overall sample	Children 0-4	Overall sample	Children 0-4
Home treatment	51	51	42	51
Informal providers*	71	71	48	43
Formal providers	46	41	77	84
Government	59	71	82	84
Private	41	29	11	10
Received full drugs at formal provider	73	79	—	—

*Informal providers include drug sellers, the market, and traditional healers.

Table 9 presents the logit regression results using similar individual and household characteristics as possible predictors for children under 5 seeking formal care when ill for Ghana and Senegal. Note that the sub-samples of children 0-4 that reported illness or injury are small, limiting the power of the analysis to detect significant predictors. The results show that insurance status was not significant in either case. The only positive significant variables are reporting serious illness or injury and being in the highest socioeconomic tercile in Ghana. The only negative significant variable is being female in Senegal. However, it is likely that a few additional variables (e.g. insurance membership and top wealth tercile) could be significant for Senegal, given a larger sample size.

Table 9. Formal care seeking by children 0-4 years of age in Ghana and Senegal

	Sought formal care when ill or injured			
	Ghana (N=88)		Senegal (N=48)	
R = reference group	Odds ratio	Significance	Odds ratio	Significance
Individual Characteristics				
Sex (R=male)				
Female	1.134		0.0504	***
Insurance status (R=not insured)				
Insured	1.074		9.744	
Illness/injury seriousness (R=not serious)				
Serious or very serious	5.831	**	1.339	
Household Characteristics				
Gender of HH head (R=male)				
Female	2.885		0.712	
Education of HH head (R=no education)				
Primary	1.468		1.426	
Secondary and above	0.770		0.577	
Occupation of HH head (R=none)				
Farming/fishing	0.645		Not included	
Other	0.496		Not included	
Socioeconomic status of HH (R = poorest tercile)				
Middle tercile	1.512		0.472	
Richest tercile	10.321	***	5.201	

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Discussion

The results of the analyses performed here show a mixed impact of MHO coverage on the use of priority health services by children 0-5 years of age. The analysis of predictors of enrollment of children into MHOs (Mali data only) shows that it is not biased in favor of children in better-off households. The findings that caretaker education and being in a female-headed household are positive predictors tend to confirm that MHOs offer a benefit to children. More-educated caretakers probably are more capable than others of understanding the concept of sharing financial risks, and female household heads, who are close to the needs of their children, take advantage of their decision-making power to enroll in MHOs.

It is somewhat unexpected to find that MHO coverage is not a positive predictor of receiving modern/formal care for curative illness and injury in Ghana and Senegal. As noted above, however, the lack of a significant finding may be because of small sample sizes. Nonetheless, MHO coverage is a positive predictor of use of specific priority curative services in Mali, namely early treatment of fever that is presumed to be malaria and modern/formal treatment of diarrhea and receiving ORS.

MHO coverage does not provide financial risk protection for the no-charge preventive services analyzed. Thus, the fact that MHO coverage shows no significant association with immunizations or vitamin A supplementation is not so surprising. However, MHO coverage is a positive predictor of the use of ITNs to prevent malaria. Greater use of preventive services would be financially advantageous to MHOs, since they would have to pay out less if their members prevented more illness. Hence, it would be in the financial interest of the MHOs and in the health interest of their members to promote the use of these services.

Implications

To reach more children with the benefits of MHO membership may require more effort to inform and explain to less-educated caretakers how MHOs work and why they are beneficial, since children with better-educated caretakers are more likely to be enrolled, all other things equal. It also may require a similar effort to reach male heads of households, who are the great majority of household heads, but are less likely to cover their children than female heads.

The positive findings of MHO membership on seeking early treatment for fever and modern/formal care for diarrhea indicate that child health advocates should support the development and spread of MHOs to increase use of these key services.

The association of MHO coverage with use of ITNs shows that there is real promise for promoting the use of preventive measures through MHOs, even when they do not provide any financial advantage for their members concerning the services that often bear no charge. This is an approach that seems to deserve more attention as MHOs continue to evolve, grow, and spread.

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